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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,683	09/02/2005	Frederic Impellizzeri	1811-64	7190
24106	7590	11/16/2006	EXAMINER	
EGBERT LAW OFFICES 412 MAIN STREET, 7TH FLOOR HOUSTON, TX 77002			HOFFMAN, MARY C	
			ART UNIT	PAPER NUMBER
			3733	

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/530,683	IMPELLIZZERI, FREDERIC	
	Examiner	Art Unit	
	Mary Hoffman	3733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10-11, 13-16 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Hawkes (U.S. Patent No. 6,679,883).

Hawkes discloses a self-locking osteosynthesis device comprising a plate having a plurality of openings formed therein, each of the plurality of openings having a diameter, the plate being formed of a metallic material; and a plurality of inserts respectively received in the plurality of openings, each of the plurality of inserts defining a hole having a diameter less than the diameter of the opening, each of the plurality of inserts being formed of a biocompatible polymeric material (col. 11, lines 29-32, e.g. UHMWP), each of the plurality of inserts being locked into the opening when a tapping screw is inserted into the hole. The plurality of inserts being formed of a thermoplastic polymer (UHMWP, see Figure 1 below). The hole has a conical shape. The plate is formed of titanium. The plurality of inserts being molded respectively into the plurality of openings. The plurality of inserts being mechanically secured respectively in the

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plurality of openings. Each of the osteosynthesis openings having a shoulder formed thereon so as to be resistive of a rotation of the insert in the opening (see curved part of hole). Each of the plurality of tapping screws comprises a head formed at an end thereof, the head extending conically from the end.

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Address: http://en.wikipedia.org/wiki/Ultra_high_molecular_weight_polyethylene Go Links SnagIt

high polymers UHMWPE Search Web Options: high strength polymers UHMWPE Sign in / create account

article discussion edit this page history

From Wikipedia, the free encyclopedia

Ultra high molecular weight polyethylene

It has been suggested that *Dyneema* be merged into this article or section. (Discuss)

Ultra high molecular weight polyethylene (UHMWPE), also known as **high modulus polyethylene (HMPE)** or **high performance polyethylene (HPPE)**, is a thermoplastic. It has extremely long chains, with molecular weight numbering in the millions, usually between 3.1 and 5.67 million. The high molecular weight results from a very good packing of the chains into the crystal structure. This results in a very tough material, with the highest impact strength of any thermoplastic presently made. It is highly resistant to corrosive chemicals, with exception of oxidizing acids. It has extremely low moisture absorption, very low coefficient of friction, is self lubricating and is highly resistant to abrasion (10 times more resistant to abrasion than Carbon Steel). Its coefficient of friction is significantly lower than nylon and is comparable to teflon, but UHMWPE has better abrasion resistance than teflon. It is odorless, tasteless, and nontoxic.

Structure and properties

UHMWPE is a type of polyolefin and, despite relatively weak Van der Waals bonds between its molecules, derives ample strength from the length of each individual molecule. It is made up of extremely long chains of polyethylene, which all align in the same direction. Each chain is bonded to the others with so many Van der Waals bonds that the whole can support great tensile loads.

When formed to fibers, the polymer chains can attain a parallel orientation greater than 95% and a level of crystallinity of up to 85%. In contrast, Kevlar derives its strength from strong bonding between relatively short molecules.

The weak bonding between olefin molecules allows local thermal excitations to disrupt the crystalline order of a given chain piece-by-piece, giving it much poorer heat resistance than other high-strength fibers. Its melting point is around 144 or 152 degrees Celsius, and according to DSM, it is not advisable to use UHMWPE fibers at temperatures exceeding 80 to 100°C for long periods of time. It becomes brittle at temperatures below -150°C.

The simple structure of the molecule also gives rise to surface and chemical properties that are rare in high-performance polymers. For example, the polar groups in most polymers easily bond to water. Because olefins have no such groups, UHMWPE does not absorb water readily, but it also does not get wet easily, which makes bonding it to other polymers difficult. For the same reasons, skin does not interact with it strongly, making the UHMWPE fiber surface feel slippery. Similarly, aromatic polymers are often susceptible to aromatic solvents due to aromatic stacking interactions, an effect aliphatic polymers like Dyneema are also immune to. Since Dyneema does not contain chemical groups (such as esters, amides or hydroxylic groups) that are susceptible to attack from aggressive agents, it is very resistant to water, moisture, most chemicals, UV radiation, and micro-organisms.

Under tensile load, UHMWPE will deform continually as long as the stress is present - an effect called *creep*.

Production

UHMWPE is synthesized from monomers of ethylene, which are bonded together to form what is called *ultra high molecular weight polyethylene* (or UHMWPE). These are molecules of polyethylene which are several orders of magnitude longer than familiar, high density polyethylene due to a synthesis process based on metallocene catalysts. HDPE molecules generally have between 700 and 1,600 monomer units per molecule, while UHMWPE molecules tend to have 100,000 to 250,000 monomers each. The polymers are aligned randomly when they are produced. To make fibers like Dyneema, they are dissolved and drawn into fibers as the solvent evaporates, causing the polymer chains to orient in the direction of the fiber.

The production of UHMWPE demands relatively little energy and uses no aggressive chemicals. The product can easily be recycled, so environmental pollution from product and process is minimal.

See also

- Linear low density polyethylene
- Low density polyethylene
- High density polyethylene
- Dyneema

Categories: Articles to be merged | Polyolefins | Plastics | Synthetic fibers

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Figure 1

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkes (U.S. Patent No. 6,679,883).

Hawkes discloses the claimed invention except for the plurality of inserts being formed of a polyether ether ketone material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the plurality of inserts of a polyether ether ketone material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkes (U.S. Patent No. 6,679,883) in view of Bono (U.S. Patent No. 5,954,722).

Hawkes discloses the claimed invention except for the plurality of tapping screws being threadedly secured respectively in the hole of the plurality of inserts and the head having a threading formed thereon and extending from the end, the threading engaging a wall of the hole of the insert such that the insert is in interference fit relation with a wall of the opening.

Bono discloses tapping screws being threadedly secured respectively in the hole of the plurality of inserts and the head having a threading formed thereon and extending

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from the end, the threading engaging a wall of the hole of the insert such that the insert is in interference fit relation with a wall of the opening to threadably engage the insert (bushing) and the screw together, thus frictionally locking the screw in position in the plate hole (col. 2, lines 46-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the plurality of tapping screws being threadedly secured respectively in the hole of the plurality of inserts and the head having a threading formed thereon and extending from the end, the threading engaging a wall of the hole of the insert such that the insert is in interference fit relation with a wall of the opening to threadably engage the insert and the screw together, thus frictionally locking the screw in position in the plate hole.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

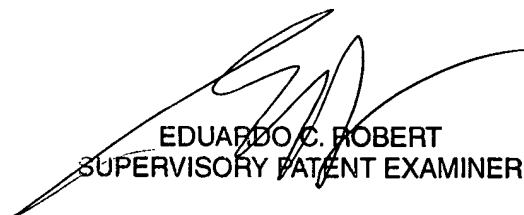

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Hoffman whose telephone number is 571-272-5566. The examiner can normally be reached on Monday-Friday 9:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eduardo C. Robert can be reached on 571-272-4719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MCH



EDUARDO C. ROBERT
SUPERVISORY PATENT EXAMINER